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(12) AUSTRALIAN PATENT ABSTRACT  
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(54) CHEMICAL DISPENSER FOR WATER TREATMENT  
(75) DAMON RICHARD BICKLE  
(21) 81 144/82 (22) 25.3.81 (23) 4.3.82 (24) 25.3.81  
(43) 30/09/82  
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(60) PE 8150 PE 9677  
(74) CU  
(57) Claim

1. A purification device for use in liquid containing structures including:

a dispenser housing; and

support means for the dispenser housing  
whereby in use said dispenser housing and said support means are operatively associated in the liquid containing structure and surrounded by the liquid wherein said support means is associated with an outlet of the liquid containing structure whereby flow of liquid through said outlet may draw liquid through said dispenser housing thereby promoting dissolution and circulation of purification agent contained in the dispenser housing throughout said liquid containing structure.

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COMMONWEALTH OF AUSTRALIA

The Patents Act 1952-1969

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COMPLETE SPECIFICATION FOR THE INVENTION ENTITLED:

IMPROVED PURIFICATION DEVICE

The following statement is a full description of the invention  
including the best method of performing it known to us:

THIS INVENTION relates to an improved purification device for use in swimming pools, water towers and other liquid containing structures which require purification.

5 The invention will be hereinafter described in relation to a chlorination device for use with swimming pools. However it will be appreciated that the invention should not be limited to this example application and will have a broader scope as set out above.

10 Hitherto chlorination device or chlorinators has mainly comprised a cylindrical dispenser which included a plurality of slots in the side wall thereof so as to allow water to percolate through the round chlorination tablets included therein and thus cause a gradual dissolving of the tablets in the swimming pool. The dispenser was normally  
15 allowed to float freely in the swimming pool or in some cases it was attached to the surrounding side wall of the swimming pool.

It has now been found that this method of chlorination was not as efficient as one would like in  
20 relation to the dissolving of the chlorination tablets (such as sodium trichlorisocyanurate) in the pool and also to circulation of the available chlorine within the swimming pool so as to achieve efficient purification thereof.

It is therefore an object of the present invention  
25 to provide a purification device which alleviates the above mentioned disadvantages associated with the prior art.

The purification device of the invention for use in a liquid containing structure includes:

30 a dispenser housing; and support means for the dispenser housing where in use said support means and said dispenser housing are contained in said liquid containing structure and surrounded by the liquid wherein the support means is operatively associated with an outlet of the liquid containing structure whereby  
35 flow of liquid through said outlet may draw liquid through

said dispenser housing from the liquid containing structure thereby promoting dissolution and circulation of purification agent contained in the dispenser housing throughout said liquid containing structure.

5 The support means which is preferably a tubular body communicating with the dispenser housing and the outlet suitably includes an exit orifice which may be aligned with the outlet of the liquid containing structure whereby liquid drawn through the dispenser housing may be exited through said exit orifice entrained with the purification agent.

10 The flow of liquid through the outlet is suitably of a sufficient velocity to cause a pressure differential between the outlet and said dispenser housing thereby drawing liquid through the dispenser housing and out into the liquid containing structure through said exit orifice of the support means.

15 The dispenser housing may be of any appropriate type and thus include a housing having a continuous side wall, base wall, open top and optionally a closure member releasably attached to said open top. Suitably the housing is of round cross section so as to suitably accommodate tablets of chlorination agent such as tablets of sodium trichlorisocyanurate which are normally obtained in round or circular form. The side wall of the dispenser housing may be comprised of mesh or is perforated or alternatively is formed from a latticework.

20 Preferably however there is included a plurality of apertures in the housing intermediate the height thereof in the side wall thereof which all have a common circumference. Suitably the base wall of the housing has an aperture communicating with an adjacent end of the tubular support body.

25 In a preferred embodiment of the invention the housing may include a plurality of upstanding locating ribs arranged around the interior of the side wall so as to locate the chlorination tablets in the housing in a central position and

provide for a plurality of floor passages for water if a water inlet is provided in the top of the housing. Alternatively if the top of the container is sealed the top tablet may be spaced from the top of the container so as to provide an air trap. In this latter embodiment there is suitably provided a multiplicity of water inlet slots about the side wall of the housing.

The tubular support body may be engaged in an outlet aperture or outlet pipe which may form the outlet of the liquid containing structure. Preferably the tubular member is elbow shaped or includes an outer upright portion and an inner horizontal portion. The tubular member however, is suitably formed as an integral member with the inner portion being attached to or engaging with the outlet of the swimming pool.

The dispenser housing may be attached to the tubular portion in any suitable manner. Thus in one form the base wall of the dispenser housing may include a downwardly extending tubular part which engages in a correspondingly shaped socket portion of the outer upright portion of the tubular member.

There also may be included jet means associated with the tubular member so as to cause water leaving the outlet of the swimming pool to be emitted suddenly or gush forth and thus enhance or promote the above mentioned pressure differential. Thus there may be provided a jet insert which may include an egress orifice of restricted size compared to an ingress orifice which may be substantially enlarged relative to the egress orifice. Preferably the jet member is of funnel shape and is hollow with the relatively elongate top part of the funnel constituting said egress orifice and the undersurface of the base wall of the funnel constituting said ingress orifice. Suitably the jet insert is located in the tubular member at the junction of the upright outer portion and the horizontal inner portion

and opposite to an outlet aperture in the side wall of the tubular member.

The horizontal inner portion of the tubular member may include an enlarged free end part which has an exterior surface which is substantially arcuate or spherical similar to the convention "eyeball" directional fitting associated with outlets of swimming pools.

Thus when formed in this manner the purification device of the invention may be fitted to the standard outlet of any conventional swimming pool. Thus the inner portion of the tubular member may thus be engaged with the outlet pipe or outlet fitting of the swimming pool and be retained in position by an inner and outer clamping ring respectively.

Reference is now made to the attached drawings which illustrates a preferred embodiment of the invention.

In these drawings FIG 1 illustrates a purification device constructed in accordance with the invention;

FIG 2 illustrates a modification of the purification device shown in FIG 1;

FIG 3 illustrates another modification of the purification device shown in FIG 1;

FIG 4 illustrates yet another modification of the purification device shown in FIG 1; and

FIG 5 illustrates again yet another modification of the purification device shown in FIG 1.

In the drawings there is shown a purification device or chlorinator constructed in accordance with the invention including cylindrical housing 10 having a continuous side wall 9, open top 11 and base wall 14. The water surface is indicated by reference numeral 8. There are included a plurality of apertures 12 around a middle part of housing 10 as well as a plurality of slots 13 located adjacent base wall 14. Base wall 14 has an aperture 15 located therein which communicated with downwardly extending tubular part 16 which is mounted in the

correspondingly shaped socket 17 of tubular support member 6. Tubular support member 6 includes an upright portion 18 and horizontal portion 19 as shown. On the free end of horizontal portion 19 there is included an arcuate or spherical outer surface 20 which locates in mating surfaces 25 and 26 of the outer clamping ring 21 and inner clamping ring 22 respectively when outer ring 21 is screw threadedly attached to inner ring 22 along the mating screw threaded surfaces as shown.

There is also shown mounting member 23 which engages in outlet pipe 24 of the wall 7 of the swimming pool. Also shown is jet insert 29 having egress orifice 27A and ingress orifice 27 which is of much greater diameter than orifice 27A. In operation water as shown by the direction of the arrows in the drawing is drawn from the outside housing 10 through apertures 12 and slots 13 into the interior of housing 10 effectively dissolving chlorination tablets (not shown) in housing 10. Water is then drawn through the bore of tubular member 6 and out through exit orifice 30 opposite jet insert 29. Water erupts through outflow orifice 27A of jet insert 29 and thereby causes a pressure differential between orifice 30 and housing 10 thereby drawings liquid from housing 10 through outlet 30 together with liquid from outer pipe 24.

Metering means of any suitable type may be associated with the device according to the invention to selectively control the flow of water through housing 10 and thus control the rate of dissolution of the chlorinating agent. Such metering means may comprise an adjustable valve member associated with tubular part 16 or a slidable sleeve member adapted to selectively obstruct apertures 12 and 13.

In FIG 2, there is shown dispenser 10 having screw cap 32 having water inlet 31A screw threadedly attached to screw threaded portion 33. Housing component 34 is mounted



within base support component 35 which contains chlorination tablets 36 as shown. Component 35 has neck portion 37 and lower tubular component 47 which is screw threadedly attached externally to insert 45. Insert 45 has metering tube 46 screw threadedly internally attached thereto. Metering tube 46 may be moved outwardly to decrease the pressure differential between housing 10 and exit orifice 30 of tubular component 47 or inwardly to increase the said pressure differential. There is also shown inner clamping ring 40 adjacent outlet 24 of the swimming pool and outer clamping ring 42 and eyeball fitting 43 wherein inner ring 40 is screw threadedly attached to outer ring 42 as shown thereby retaining eyeball fitting 43 in position which in turn retains insert 45 in the position illustrated. Housing component 35 is provided with locating ribs 31 for tablets 36 and water flows through inlet 31A between ribs 31 and out through exit orifice 30 of support component 35 as shown having chlorination compound entrained therein.

In FIG 3 the principal difference between this figure and FIG 2 is that housing component 35A has neck portion 37A screw threadedly attached to mating socket body 37B as shown of support tube 47A having exit orifice 30 as shown.

In FIG 4 housing component 35B has inlets 31B and 31A as shown which may have tab closures which are cut off or pierced before use. Housing component 35B is screw threadedly attached to support base 35C having neck portion 37A which is screw threadedly attached to socket portion 37B of support tube 47B which has outlet body 47C having exit orifice 30 screw threadedly attached thereto.

There is also shown jet insert tube 46A having an ingress orifice of greater proportion than the egress orifice as shown.

From a review of FIG 2-4, it will be appreciated

that the housing 10 may comprise many different shapes and forms and may be sold with the chlorination tablets inside for ready attachment to the support tube exemplified by members 35 in FIG 2, 47A in FIG 3 and 47B in FIG 4.

5 In FIG 5 there is shown dispenser housing 35C having flow apertures 31B in the form of break-off tabs. Dispenser housing 35C contains chlorination tablets 36 supported on ribs 57. There is also provided base wall component 48 of dispenser housing 35C screw threadedly attached thereto at 56. Base wall component 48 is also screw threadedly attached at 54 to support tube 58 having upright portion 49 and end portion 51 which includes outlet orifice 30. Upright portion 49 has a bore 50 of reduced dimensions when compared to end portion 51. There is also shown sealing ring 52 having one or more flow apertures 53 for metering flow of water through orifice 30. End portion 51 of tube 58 is screw threadedly attached to eyeball fitting 43 at 55.

10 15 20 Sealing ring or metering ring 52 is suitably formed from resilient plastics material.

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The Claims defining the invention are as follows:

1. A purification device for use in liquid containing structures including:
  - a dispenser housing; and
  - support means for the dispenser housingwhereby in use said dispenser housing and said support means are operatively associated in the liquid containing structure and surrounded by the liquid wherein said support means is associated with an outlet of the liquid containing structure whereby flow of liquid through said outlet may draw liquid through said dispenser housing thereby promoting dissolution and circulation of purification agent contained in the dispenser housing throughout said liquid containing structure.
2. A purification device as claimed in claim 1 wherein the support means is a tubular body communicating with the dispenser housing and also with the outlet of the liquid containing structure in use whereby said tubular body includes an exit orifice alignable with the internal bore of the outlet when it is an outlet pipe.
3. A purification device as claimed in claim 2 wherein the tubular body has offset end portions including an outer upright portion containing said exit orifice which is attached to the dispenser housing and an inner horizontal portion attachable to the outlet pipe of the liquid containing structure.
4. A purification device as claimed in claim 3 wherein there is provided a jet insert contained in the interior of the tubular body having an internal bore or part thereof which is of restricted transverse dimensions when compared to the outlet pipe of the liquid containing structure to enhance an existing pressure differential between the dispenser housing and the tubular body to facilitate drawing of water through the exit orifice of the tubular body entrained with purification agent.

5. A purification device as claimed in claim 4 wherein the jet insert tube is screw threadedly attachable to the horizontal portion of the tubular body to selectively control the flow of water through the purification housing.
6. A purification device as claimed in claim 2 wherein there is provided a metering ring rotatably mounted to an upright portion of the tubular body and containing one or more flow apertures to control the amount of liquid passing through the dispenser housing.
7. A purification device as claimed in claim 6 wherein at least part of the upright portion of the tubular body is of restricted bore when compared to the bore of the outlet pipe.
8. A purification device as claimed in any preceding claim wherein the dispenser housing is of round cross section to accommodate tablets of chlorination agent and has an open lower end as well as a continuous side wall which is perforated or otherwise apertured to provide a plurality of flow apertures.

DATED this Third day of March, 1982,

DAMON RICHARD BICKLE  
by his Patent Attorneys  
G.R. CULLEN & COMPANY

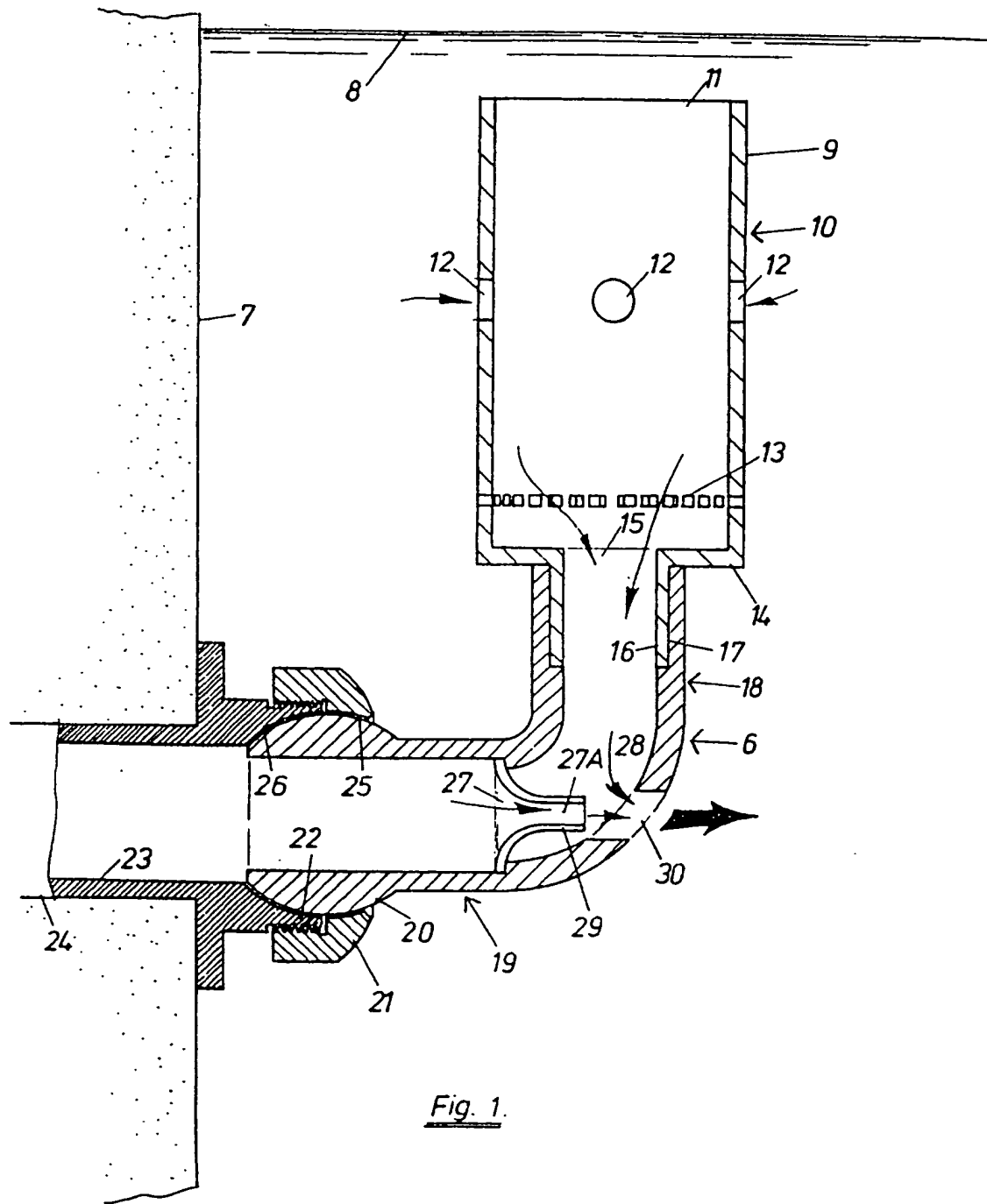


Fig. 1.

